

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appl. No. 9/816,770 (Q63724)

providing ID data for identifying the respective nozzle orifices;

providing a reference drive signal which is applied to the piezoelectric vibrator such that a reference liquid droplet having a designated amount is jetted from the nozzle orifice;

applying the reference drive signal to the respective piezoelectric vibrators to jet liquid droplet from the nozzle orifices;

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cut measuring amounts of the respective liquid droplets jetted from the respective identified nozzle orifices by the reference drive signal;

identifying a difference between the designated amount and the measured amount of each liquid droplet;

providing correction data for reducing the difference;

associating the correction data with the respective nozzle orifices identified by the ID data; and

storing the associated correction data;

adjusting a displacement behavior of a piezoelectric vibrator associated with the identified nozzle orifice, based on the associated correction data.

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3. (Twice Amended) A method of jetting liquid droplets, comprising the steps of:

providing a liquid jetting head which includes: a plurality of nozzle orifices; a plurality of pressure generation chambers associated with the nozzle orifices; and a plurality of piezoelectric

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vibrators for respectively varying the volume of the associated pressure generation chamber to
jet a liquid droplet from the associated nozzle orifice;

setting a single jetting cycle as a period in which N drive signals are applicable to the
piezoelectric vibrators to jet liquid droplets from the nozzle orifices, N being an integer;

providing ID data for identifying the respective nozzle orifices;

providing a reference drive signal which is applied to the piezoelectric vibrator such that
a reference liquid droplet having a designated amount is jetted from the nozzle orifice;

applying the reference drive signal to the respective piezoelectric vibrators to jet liquid
droplets from the nozzle orifices;

measuring amounts of the respective liquid droplets jetted from the respective identified
nozzle orifices by the reference drive signal;

identifying a difference between the designated amount and the measured amount of each
liquid droplet;

providing correction data for reducing the difference;

associating the correction data with the respective nozzle orifices identified by the ID
data; and

storing the associated correction data;

selecting M drive signals from the N drive signals based on the associated correction
data, M being an integer which is equal to or less than N; and

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applying the M drive signals to the piezoelectric vibrators within the single jetting cycle.

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6. (Twice Amended) A liquid jetting apparatus, comprising:

a liquid jetting head including: a plurality of nozzle orifices; a plurality of pressure generation chambers associated with the nozzle orifices; and a plurality of piezoelectric vibrators for respectively varying the volume of the associated pressure generation chamber to jet a liquid droplet from the associated nozzle orifice;

a drive signal generator, for generating a plurality of drive signals, respectively driving the piezoelectric vibrators, within a single jetting cycle of the liquid jetting head;

an ID data storage, for storing ID data which identifies the respective nozzle orifices;

a reference drive signal generator, for generating a reference drive signal which is applied to the piezoelectric vibrator such that a reference liquid droplet having a designated amount is jetted from the nozzle orifice;

a reference drive signal applier, for applying the reference drive signal to the respective piezoelectric vibrators to jet liquid droplet from the nozzle orifices;

an identifier, for measuring amounts of the respective liquid droplets jetted from the respective identified nozzle orifices by the reference drive signal, and identifying a difference between the designated amount and the measured amount of each liquid droplet;

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a correction data storage, for storing correction data which reduces the difference, and the correction data associated with the respective nozzle orifices identified by the ID data; and

a drive signal supplier, for selecting at least one drive signal from the plural drive signals to adjust a displacement behavior of a piezoelectric vibrator associated with the identified nozzle orifice, based on the associated correction data.

8. (Twice Amended) A liquid jetting apparatus, comprising:

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a liquid jetting head including: a plurality of nozzle orifices; a plurality of pressure generation chambers associated with the nozzle orifices; and a plurality of piezoelectric vibrators for respectively varying the volume of the associated pressure generation chamber to jet a liquid droplet from the associated nozzle orifices;

at least one drive signal generator, for generating N drive signals, respectively driving the piezoelectric vibrators, within a single jetting cycle of the liquid jetting head, N being an integer which is not less than 3;

an ID data storage, for storing ID data which identifies the respective nozzle orifices;

a reference drive signal generator, for generating a reference drive signal which is applied to the piezoelectric vibrator such that a reference liquid droplet having a designated amount is jetted from the nozzle orifice;

a reference drive signal applier, for applying the reference drive signal to the respective piezoelectric vibrators to jet liquid droplets from the nozzle orifices;

an identifier, for measuring amounts of the respective liquid droplets jetted from the respective identified nozzle orifices by the reference drive signal, and identifying a difference between the designated amount and the measured amount of each liquid droplet;

a correction data storage, for storing correction data which reduces the difference, and the correction data associated with the respective nozzle orifices identified by the ID data; and

a drive signal supplier, for identifying a nozzle orifice in which the jetting amount is to be corrected, through use of the ID data, and selecting M drive signals from the N drive signals to adjust a displacement behavior of a piezoelectric vibrator associated with the identified nozzle orifice, based on the associated correction data, M being an integer which is equal to or less than N.

12 (Amended) A method jetting liquid droplets, comprising the steps of:

providing a liquid jetting head which includes: a plurality of nozzle orifices; a plurality of pressure generation chambers associated with the nozzle orifices; and a plurality of piezoelectric vibrators for respectively varying the volume of the associated pressure generation chamber to jet a liquid droplet from the associated nozzle orifice;

providing ID data for identifying the respective nozzle orifices;

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providing a reference drive signal which is applied to the piezoelectric vibrator such that a reference liquid droplet having a designated amount is jetted from the nozzle orifice;

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applying the reference drive signal to the respective piezoelectric vibrators to jet liquid droplet from the nozzle orifices, wherein a plurality of drive signals for driving the piezoelectric vibrators to jet liquid droplets from the nozzle orifices is provided, the drive signals respectively having different liquid jetting energy from each other, and wherein at least one drive signal within a single jetting cycle of the jetting head is selected and applied to the piezoelectric vibrator;

measuring amounts of the respective liquid droplets jetted by the reference drive signal;

identifying a difference between the designated amount and the measured amount of each liquid droplet, wherein volume differences among the liquid droplets ejected by the respective drive signals can be divided by a volume of a liquid droplet which is the minimum volume jetted by one drive signal;

providing correction data for reducing the difference; and

adjusting a displacement behavior of a piezoelectric vibrator associated with the identified nozzle orifice, based on the correction data.

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Please add the following new claim:

20. The liquid jetting method as set forth in claim 2, wherein volume differences among the liquid droplets ejected by the respective drive signals can be divided by a volume of a liquid droplet which is the minimum volume jetted by one single drive signal.